

- Fig. 11.* The same, form of the globular granuliferous cells of the dermal sarcode, to contrast with the elongated forms in fig. 10.
- Fig. 12.* The same, three spongozoa, much magnified, each about 1-3000th inch in diameter.
- Fig. 13.* The same, ovum much magnified, showing:—*a*, capsule; *b*, ovi-cell filled with nucleated granuliferous cellules suspended in a dark red grumous matter.

XIV.—*Descriptions of two new Sponges from the Philippine Islands.* By H. J. CARTER, F.R.S. &c.

THE two following Sponges, obtained at Cebu, one of the Philippine Islands, by Dr. A. B. Meyer, and now the property of the British Museum, are herewith described at the request of Dr. J. E. Gray, pending their further description and future illustration elsewhere.

1. *Meyerina* (nov. gen.) *claviformis*, Gray.

*Specific character.*—Sarco-spiculous. General form long, conical, cucumber-like, slightly bent upon itself. Colour now (that is in its dried state) light sponge-yellow. Cylindrical at the base, where the yellow colour ceases, and the structure is extended by bundles of long, colourless, glassy spicules, which were continued downwards for several inches into the sandy mud in which the sponge grew, while they pass upwards in an oblique network, longitudinally, to the middle of the body, whence they are continued on, by repetition, to terminate at the apex in short naked tufts round the cloacal orifice of the sponge, like those at the root, to which they thus bear a miniature resemblance. Surface even towards the base, becoming angular in the middle third by the projection of long ridges, which, uniting longitudinally, leave lozenge-shaped intervals as they gradually subside towards the apex. Vents chiefly on the ridges, in large *circular* network, and here and there in the intervals, which, on the other hand, are occupied by a small *rectangular* network, in the interstices of which are the pores. Internal structure rigid, reticulate, largely canalo-areolar, especially towards the surface, interwoven with the longitudinal spicules before mentioned, and surrounding a long, fusiform cloacal cavity, which commences about four inches from the base, and, increasing gradually in size to about the middle of the body of the sponge (where it is an inch in diameter), then diminishes again towards the apex, where it terminates in an orifice about one sixth of an inch wide; permeated on all sides by the canals of the areolar structure, which

open into it. Spicules of *ten* kinds, viz.:—1st, of the root: *a*, long, smooth, large, ends pointed above, broken off below; *b*, long, spined, small, ends pointed and smooth above, anchor-shaped below; spines recurved, alternate, ceasing just before they arrive at the lower extremity, which is two-armed, opposite. 2nd, of the ridges or vent-area: *c*, nail-like, head consisting of four short arms extended horizontally and at or nearly at right angles to each other, situated on a long vertical shaft; *d*, thin, straight, acerate, fusiform-spined, situated in bundles round and projecting beyond the former; spines directed inwards, almost vertical and recurved at first, becoming afterwards nearly parallel with the shaft; *e*, anchor-headed (“birotulate”), large, with straight tubercled shaft and eight arms at each end, equally long, directed towards the middle of the shaft and arranged at equal distances (somewhat spreading) from each other around each end, very numerous, and bespangling the surface of the vent-area with the outermost head; *f*, crucial-headed, with long spined shaft; arms of the head short, one or two blunt-spined, abruptly ended, slightly curved in opposite directions (*i. e.* slightly sigmoid); shaft densely armed a little below the head with long, stout, recurved spines on all sides, bottle-brush-like; in great numbers round the vents, with their heads applied to the horizontal arms of *c*, and their spined shafts projecting outwards so as to form a fringe round the vents, capable of thus closing them when required; *g*, anchor-headed, minute, resembling a miniature form of *e*, charging the sarcode in great numbers round the arms of *c*, and, indeed, everywhere; *h*, hexaradiate, minute, each arm bearing a few long spines towards its extremity, the rest smooth; numerous in the sarcode, and characteristic of the species; *i*, acerate, fusiform, minute, bearing four large spines opposite and nearly vertical in the centre, and a few others sparsely scattered over the rest of the shaft, chiefly towards the ends, numerous and characteristic. 3rd, of the pore-area: *k*, like *c*, but with longer horizontal arms and shorter vertical shaft; *l*, like *f*, but with shorter shaft; *m*, the same as *e*, but not so abundant as in the vent-area; *n*, like *g*, but more plentiful here. Spicule of the tufts at the apex spined towards the free end, with the spines directed *outwards*. Spicules of the internal structure a mixture of those above described, with the arms of the crucial-headed one greatly extended.

Size of specimen: total length 18 inches. From the apex to the commencement of the root-spicules 15 inches; root-spicules 3 inches (probably six or more if the whole were present entire and extended, instead of being wrapt up in a bunch as

they now are); diameter in the centre 2 inches; cylindrical portion between the root and the ridges  $1\frac{1}{2}$  in diameter by 3 inches long.

*Hab.* Marine, growing erect in sandy mud.

*Loc.* Cebu, one of the Philippine Islands (Dr. A. B. Meyer).

*Obs.* The spicules *a*, *c*, *e*, *g* closely resemble similar ones in *Carteria* and the glass-cord respectively; *f*, although common to *Carteria* and *Holtenia*, more closely resembles this spicule in the latter; and *b* is almost identical with the long root-spicule of *Holtenia* and *Pheronema Grayi*; *h* and *i* are peculiar to the species—that is, not found in either of the other sponges mentioned. The common, long, acerate fusiform spicule with central canal-cross and inflation is apparently absent here, together with the rarer spined crucial spicule of *Hyalonema*, as is apparently the case in *Holtenia*; so that our sponge is a mixture of *Carteria*, *Holtenia*, and *Pheronema*, which shows that they are all three closely allied.

This is the most exquisite sponge that I have yet examined as a whole and in its parts. Individually its spicules equal any in beauty of form, and collectively surpass all. Its general form has been shortly described by Dr. J. E. Gray, under the name of *Meyerella claviformis*, in the last number of the 'Annals' (p. 76); but Dr. Gray has now changed "*Meyerella*" to "*Meyerina*," having discovered that the former has been already used for something else.

## 2. *Crateromorpha* (nov. gen.) *Meyeri*, Gray.

*Specific character.*—Sarco-spiculous. General form globular, wide, ovate, truncated, hollow, supported on a contracted stem, goblet-shaped. Colour light sponge-yellow in its dried state. Margin of the brim extremely thin, thickening towards the base. Covered externally throughout with a fine reticular structure of square meshwork, in the interstices of which the pores are situated. Vents on the inner side of the cup enormously large at the bottom, becoming smaller towards the brim. Internal structure dense, permeated by inosculating canals, which respectively open by the vents into the inner side of the cup, and appear beneath the reticular structure externally. Stem long, round, contracted, compound, fistulous—that is, consisting of a dozen longitudinal canals imbedded in a felt-like disposition of the spicules, which canals open into the vents at the bottom of the cup where the stem joins the latter; stem becoming dispersed at the other end, where it disappears in a fibrous mass into the sandy mud in which the sponge grew. Spicules of five kinds:—1st, of the head: *a*, straight,

fusiform, inflated and spined at the ends, also inflated more or less and smooth in the centre, where the central canal has a hexaradiate cross, opposite to the ends of which there may be two or four tubercles; this is the staple form of the spicule of this sponge; and by intercrossing each other in bundles at and about right angles they support the dermal reticular structure above; *b*, nail- or crucial-headed, scanty; arms smooth, straight and pointed, the shaft a little longer than the rest—among the foregoing, but chiefly visible at the base of the sponge on the outside about the point where the stem joins the cup—supporting, together with *a*, the dermal reticular structure; *c*, hexaradiate, *minute*, smooth, each arm of the cross, immediately after leaving the centre, separating into two long, divergent spines, in myriads throughout the sponge. 2nd, of the pore-area: *d*, nail- or crucial-headed, arms parting at right angles from the centre, more or less inflated at the ends, and spined throughout; shaft a little longer than the rest, also spined and more or less pointed; arms of this spicule spreading out horizontally to reach the centres of the adjoining crosses, and thus together forming the rectangular dermal network. 3rd, of the stem: *e*, the same as *a*, forming a felt-like mass, in the midst of which are the long fistular canals; *f*, the nail-head spicule *b*, chiefly found about the part mentioned; *g*, large, smooth, thick spicules 4-12ths of an inch in length, acute, inflated at both ends, fusiform and acerate respectively, distributed longitudinally over the surface of the stem.

Size of specimen: widest part of head  $3\frac{1}{2}$  inches, aperture  $2\frac{3}{4}$  by  $1\frac{3}{4}$  inches; depth of cup  $2\frac{1}{4}$  inches; length of head outside  $3\frac{3}{4}$  inches; greatest thickness of walls 14-12ths of an inch; length of stem  $3\frac{1}{2}$  inches, diameter of stem 7-12ths.

*Hab.* Marine, growing erect in sandy mud.

*Loc.* Cebu, one of the Philippine Islands (Dr. A. B. Meyer).

*Obs.* This is entirely a new genus, although, as will hereafter be seen, some of its spicules are almost identical with those of *Rossella philippinensis*, Gray (to be described hereafter), which comes from the same locality and is also cup-like, but is fixed to the bottom by a number of bundles, or tail-like extensions from the base, of long, stiff spicules, bearing at their extremities the four-armed recurved head which I have already given ('Annals' for June 1872, p. 414, pl. xxi.) as an essential character of this genus.